CLAIMS

What is claimed is:

1. A method for synchronizing redundant network elements, the method comprising:

transmitting a checkpoint indication signal to a primary element and at least one backup element, wherein each of the primary element and the at least one backup element has one or more connections to a network;

generating a first checkpoint that is indicative of a first status of the primary element associated with a first arrival time of the checkpoint indication signal at the primary element;

generating a second checkpoint that is indicative of a second status of the at least one backup element associated with a second arrival time of the checkpoint indication signal at the at least one backup element; and

comparing the first checkpoint and the second checkpoint to determine a synchronization between the primary element and the backup element.

2. The method according to claim 1, wherein the checkpoint indication signal is transmitted from the primary element, the at least one backup element or a source outside the network.

3. The method according to claim 1, wherein the step of generating a first checkpoint further comprises the steps of:

identifying a first arrival time of the checkpoint indication signal at the primary element;

finishing processing of any data arriving at the primary element before the first arrival time of the checkpoint indication signal;

suspending processing of a plurality of data arriving at the primary element after the first arrival time of the checkpoint indication signal;

generating a first checkpoint that is indicative of the status of the primary element in suspension;

transmitting the first checkpoint to the at least one backup element; and

resuming processing of the plurality of data arriving at the primary element after the first arrival time of the checkpoint indication signal.

4. The method according to claim 1, wherein the step of generating a second checkpoint further comprises the steps of:

identifying a second arrival time of the checkpoint indication signal at the at least one backup element;

finishing processing of any data arriving at the at least

one backup element before the second arrival time of the checkpoint indication signal;

suspending processing of a plurality of data arriving at the at least one backup element after the second arrival time of the checkpoint indication signal; and

generating a second checkpoint that is indicative of the status of the at least one backup element in suspension.

5. The method according to claim 4 further comprising the steps of:

keeping the at least one backup element in suspension after generation of the second checkpoint;

comparing the second checkpoint with the transmitted first checkpoint;

updating the at least one backup element based on the transmitted first checkpoint if the second checkpoint does not match the transmitted first checkpoint based on a predetermined set of criteria; and

taking the at least one backup element out of suspension.

6. The method according to claim 4 further comprising the steps of:

taking the at least one backup element out of suspension

after generation of the second checkpoint;

comparing the second checkpoint with the transmitted first checkpoint; and

reporting an error if the second checkpoint does not match the transmitted first checkpoint based on a predetermined set of criteria.

7. At least one signal embodied in at least one carrier wave for transmitting a computer program of instructions configured to be readable by at least one processor for instructing the at least one processor to execute a computer process for performing the method as recited in claim 1.

8. At least one processor readable carrier for storing a computer program of instructions configured to be readable by at least one processor for instructing the at least one processor to execute a computer process for performing the method as recited in claim 1.

9. A system for synchronizing redundant network elements, the system comprising:

means for transmitting a checkpoint indication signal to a primary element and at least one backup element, wherein each of

the primary element and the at least one backup element has one or more connections to a network;

means for generating a first checkpoint that is indicative of a first status of the primary element associated with a first arrival time of the checkpoint indication signal at the primary element;

means for generating a second checkpoint that is indicative of a second status of the at least one backup element associated with a second arrival time of the checkpoint indication signal at the at least one backup element; and

means for comparing the first checkpoint and the second checkpoint to determine a synchronization between the primary element and the backup element.

10. A method for synchronizing redundant network elements, the method comprising:

receiving at a backup element a checkpoint indication signal;

generating a first checkpoint that is indicative of a status of the backup element associated with an arrival time of the checkpoint indication signal at the backup element;

receiving a second checkpoint from a primary element; and

comparing the first checkpoint and the second checkpoint to

determine a synchronization between the primary element and the backup element.

11. A system for synchronizing redundant network elements, the system comprising:

means for receiving at a backup element a checkpoint indication signal;

means for generating a first checkpoint that is indicative of a status of the backup element associated with an arrival time of the checkpoint indication signal at the backup element;

means for receiving a second checkpoint from a primary element; and

means for comparing the first checkpoint and the second checkpoint to determine a synchronization between the primary element and the backup element.